Docket No.: SON-2839
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mitsuyasu Tamura et al.

Application No.: 10/500,237 | Confirmation No.: 7485

Filed: June 25, 2004 | Art Unit: 2629

For: IMAGE DISPLAY DEVICE AND THE COLOR BALANCE ADJUSTMENT METHOD | Examiner: A. S. Beck

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal Brief under 37 C.F.R. § 41.37 appealing the Final Office Action of the Examiner dated July 1, 2009. This Brief is also in furtherance of the Notice of Appeal previously filed on November 2, 2009 along with a Request for Pre-Appeal Brief Panel Review. A Panel Decision dated February 16, 2010 allowed this matter to proceed to the Board of Patent Appeals and Interferences.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.2:

I. Real Party In Interest
II Related Appeals and Interferences
III. Status of Claims

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

The real party in interest for this appeal is Sony Corporation, of Tokyo, Japan. An assignment of all rights in the present application to Sony Corp., was executed by the inventor and recorded by the U.S. Patent and Trademark Office at **reel 016046, frame 0106**.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 19 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 2, 8, and 14

2. Claims withdrawn from consideration but not canceled: none

3. Claims pending: 1, 3-7, 9-13, 15-22

4. Claims allowed: none

5. Claims rejected: 1, 3-7, 9-13, 15-22

C. Claims On Appeal

The claims on appeal are claims 1, 3-7, 9-13, 15-22

IV. STATUS OF AMENDMENTS

A Non-Final Office Action rejecting claims 1-22 was mailed on January 24, 2007 and an Amendment in response to the Non-Final Action was filed on June 15, 2007 amending the rejected claims. A Non-Final Office Action rejecting claims 1, 3-13, and 15-22 was mailed on September 11, 2007 and an Amendment in response to the Non-Final Action was filed on February 22, 2008 amending the rejected claims. A Final Office Action rejecting claims 1, 3-13, and 15-22 was mailed on June 24, 2008. An Amendment After Final was filed on September 22, 2008. An Advisory Action dated October 22, 2008 maintained the grounds of rejection. A Request for Continued Examination was filed on November 20, 2008. A Non-Final Office Action rejecting claims 1, 3-7, 9-13, and 15-22 was mailed on February 210, 2009 and a Request for Reconsideration in response to the Non-Final Action was filed on April 8, 2009. A Final Office Action rejecting claims 1, 3-7, 9-13, and 15-22 was mailed on July 1, 2009. An Amendment After Final was then filed on August 26, 2009, and an Advisory Action dated September 18, 2009 maintained the grounds of rejection. Appellant then filed a Notice of Appeal and Request for Pre-Appeal Brief Panel Review on November 2, 2009. A Decision on Panel Review dated February 16, 2010 allowed the matter to proceed to the Board of Patent Appeals and Interferences.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1. An image display device, comprising:	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
a circuit for generating drive signals from an input image signal;	e.g., Fig. 2, 5-6, 1-19; p. 6, lines 19-21, p. 17, lines 1-4.
a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green, or blue by being applied with said drive signal supplied for each color from said circuit;	e.g., Fig. 1 and 3; p. 6, lines 22-24, p. 19, lines 2-9.
an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element;	e.g., Fig. 1, 3, and 14; adjustment information retrieve means 4; p. 7, lines 1-8, p. 19, line 25 through p. 20, line 25, p. 30, line 22-24.
a level adjustment circuit provided in said circuit , for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means; and	e.g., Fig. 1, 3 and 13; adjustment information retrieve means 4; p. 7, lines 4-9, p. 21, lines 1-4, p. 30, line 21 through p. 21, line 15.
wherein said level adjustment circuit changes a level of a direct current voltage supplied to said circuit, proportionally to account for the deterioration of a luminance of said light	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19, line 23 through p. 20, line 21.

emitting element; and	
said adjustment information retrieve means and said level adjustment circuit further comprise:	e.g., Fig. 1, 3, and 14; adjustment information retrieve means 4; p. 7, lines 1-8, p. 19
a plurality of pixels, including pixels of at least each respective RGB color;	e.g., Fig. 1 and 3; p. 7, lines 15-21, p. 15, lines 9-21.
a detection means for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.	e.g., Fig. 1, 3, 14-16; signal processing circuit 22; p. 9, lines 1-8, p. 24, line 10 through p. 25, line 8.

Claim 3. An image display device as set forth in claim 1, further comprising	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
a D/A converter for performing digital-analog conversion on said RGB signal;	e.g., Fig. 3; p. 6, lines 9-19.
wherein said adjustment information retrieve means retrieves said information relating to changes over time for each of RGB colors; and	e.g., Fig. 1, 3, and 14; adjustment information retrieve means 4; p. 7, lines 1-8, p. 19
said level adjustment circuit changes a reference voltage to be supplied to said D/A converter based on said information of respective RGB colors obtained by said adjustment information	e.g., Fig. 1, 3 and 13; adjustment information retrieve means 4; p. 6, lines 9-19, p. 7, lines 4-9, p. 21, lines 1-4, p. 30, line 21 through p. 21, line 15.

retrieve means.	

Claim 4. An image display device as set forth in claim 1, further comprising:	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
a plurality of data lines for connecting by each color said plurality of pixels repeatedly arranged by a predetermined color arrangement; and	e.g., Fig. 1, 3; p. 7, lines 14-23, p. 16, line 14 through p. 17 line 10.
a data holding circuit for holding for the respective RGB colors time-series pixel data composing said RGB signal and outputting the pixel data held for the respective colors as said drive signals in parallel with corresponding plurality of said data lines;	e.g., Fig. 1 and 3; p. 7, lines 15-21, p. 15, lines 9-21.
wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit.	e.g., Fig. 1, 3 and 13; adjustment information retrieve means 4; p. 6, lines 9-19, p. 7, lines 4-9, p. 21, lines 1-4, p. 30, line 21 through p. 31, line 15.

Claim 5. An image display device as set forth in claim 4,	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein a control signal input to said level adjustment circuit for changing a level of said direct current voltage is in common with a sample hold signal for controlling said data holding circuit.	e.g., Fig. 1 and 3; p. 8, lines 5-9, p. 30, lines 1-25.

Claim 6. An image display device as set forth in claim 4,	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein a control signal input to said level adjustment circuit for changing said direct current voltage is a signal in synchronization with a sample hold signal for controlling said data holding circuit.	e.g., Fig. 1 and 3; p. 8, lines 5-9, p. 30, lines 1-25.

Claim 7. An image display device as set froth in claim 1, wherein:	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
said adjustment information retrieve means and said level adjustment circuit further comprises;	e.g., Fig. 1, 3, and 14; adjustment information retrieve means 4; p. 6, lines 9-19, p. 7, lines 4-9, p. 7, lines 1-8, p. 19, line 25 through p. 20, line 25, p. 30, line 22-24.

a memory means for storing correspondence of said changing value and a level adjustment amount of said RGB signal.	e.g., Fig. 1, 3 and 13; CPU 22a; p. 6, lines 9-19, p. 7, lines 4-9, p. 21, lines 1-4.

Claim 9. An image display device as set froth in claim 1,	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein said light emitting element is an organic electroluminescence light emitting element.	e.g., Fig. 1, 3, 14-16; p. 15, lines 2-8.

Claim 10. An image display device, comprising:	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
a circuit for generating drive signals from an input image signal; and	e.g., Fig. 2, 5-6, 1-19; p. 6, lines 19-21, p. 17, lines 1-4.
a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue by being applied with said drive signal supplied for each color from said circuit;	e.g., Fig. 1 and 3; p. 6, lines 22-24, p. 19, lines 2-9.
wherein said circuit comprises a motion detection circuit for detecting motions by said image signal;	e.g., Fig. 1 and 18; p. 11, 16-23, p. 52, line 14 through p. 545 line8.

a level adjustment circuit for changing a level of an RGB signal before the RGB signal is divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit; and	e.g., Fig. 1, 3 and 13; p. 7, lines 4-9, p. 21, lines 1-4, p. 30, line 21 through p. 21, line 15.
a duty ratio adjustment circuit for changing the duty ratio of a light emission time of said pixels based on the motion detection result;	e.g., Fig. 1 and 18-19; p. 11, line 20-24, p. 55, line 8 through p. 58, line 18.
and wherein the plurality of pixels each comprise a light emission control circuit whereby once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the light emission control circuit receives a signal from the duty ratio adjustment circuit.	e.g., Fig. 1 and 3; p. 6, lines 22-24, p. 55, line 8 through p. 58, line 18.

Claim 11. An image display device as set forth in claim 10,	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein said level adjustment circuit changes a level of a direct current voltage supplied from a circuit block in said circuit and proportional to luminance of said light emitting element.	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19, line 23 through p. 20, line 21.

Claim 12. An image display device as set forth in claim 10,	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein said light emitting element is an organic electroluminescence light emitting element.	e.g., Fig. 1, 3, 14-16; p. 15, lines 2-8.

Claim 13. A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with an input drive signal, including:	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
a step of obtaining information relating to light emission adjustment of said light emission element;	e.g., Fig. 1and 3; p. 7, lines 2-8, p. 20 line 1-17.
a step of changing a level of an RGB signal before dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment; and	e.g., Fig. 1, 3, and 14; p. 7, lines 1-8, p. 8, line 20-25.
a step of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data and supplying to said pixels corresponding thereto; and wherein	e.g., Fig. 1 and 3; p. 7, lines 15-21, p. 15, lines 9-21.

in the step of changing a level of said RGB signal, a level of the direct current voltage is supplied to a circuit for performing signal processing on an image signal and generating said drive signals, proportionally to the change in luminance of said light emitting element	e.g., Fig. 1 and 3; p. 8, lines 5-9, p. 30, lines 1-25.
and the obtaining information step and said changing step include detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.

Claim 15. A color balance adjustment method of an image display device as set forth in claim 13, including	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
a holding step for holding for the respective RGB colors time-series pixel data composing said RGB signal when generating said drive signals;	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
wherein, in the step of changing a level of said RGB signal , by changing the level of said direct current voltage for necessary times based on information obtained from an adjustment information retrieve means at a timing that pixel	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19, line 23 through p. 20, line 21.

data of a different color is input to said holding step, a level of said drive signal of at least one color is adjusted.	

Claim 16. A color balance adjustment method of an image display device as set forth in claim 13, wherein	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
the step of retrieving information relating to said light emission adjustment includes	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 8, lines 10-22.
a step of detecting a value changing along with luminance of pixels from pixels of the respective colors; and	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19, line 23 through p. 20, line 21.
a step of determining a level adjustment amount of said RGB signal from said changing value based on correspondence of said changing value and a level adjustment amount of said RGB signal obtained in advance.	e.g., Fig. 1, 3, and 14; p. 7, lines 1-8, p. 8, line 20-25.

Claim 17. A color balance adjustment method of an image display device as set forth in claim 13, wherein	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.

the step of retrieving information relating to said light emission adjustment includes	e.g., Fig. 1, 3, 14-16; p. 6, lines 6-16.
a step of counting an accumulated light emission time of the pixels; and	e.g., Fig. 1 and 3, p. 32, lines 4-9.
step of determining a level adjustment amount of said RGB signal from the current accumulated light emission time of the pixels based on the correspondence of said accumulated light emission time and the level adjustment amount of said RGB signal obtained in advance.	e.g., Fig. 1, 3, and 14; p. 7, lines 1-8, p. 8, line 20-25.

Claim 18. A color balance adjustment method of an image display device as set forth in claim 13,	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
wherein said light emitting element is an organic electroluminescence light emitting element.	e.g., Fig. 1, 3, 14-16; p. 15, lines 2-8.

Claim 19. A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with a drive	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.

generated by performing signal processing on an input image signal, including:	
a step of detecting motions of an image to be displayed from said image signal;	e.g., Fig. 1and 3, 14-16; p. 11, lines 15-20.
a step of changing a level of an RGB signal before the RGB signal is divided to said drive signals of the respective RGB colors based on the result of said motion detection; and	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19, line 23 through p. 20, line 21.
a step of changing a duty ratio of a pulse for controlling a light emission time of said pixels based on said detection result; and	e.g., Fig. 1 and 3; p. 6, lines 22-24, p. 55, line 8 through p. 58, line 18.
a step of illuminating the plurality of pixels wherein, for each pixel, once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the pixel continues to receives a signal from the duty ratio adjustment circuit.	e.g., Fig. 1 and 3; p. 6, lines 22-24, p. 55, line 8 through p. 58, line 18.

Claim 20. A color balance adjustment method of an image display device as set forth in claim 19, wherein	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
in the step of changing a level of said RGB signal , a level of a direct current voltage	e.g., Fig. 1, 3 and 13-14; p. 7, lines 10-13, p. 19,

supplied to a circuit block in a circuit for performing signal processing on an image signal and generating said drive signals , and proportional to luminance of said light emitting element is changed.	line 23 through p. 20, line 21.

Claim 21. A color balance adjustment method of an image display device as set forth in claim 20, including	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.
a holding step for holding for the respective RGB colors time-series pixel data composing said RGB signal when generating said driving signals;	e.g., Fig. 2, 5-6, 1-19; p. 6, lines 19-21, p. 17, lines 1-4.
wherein, in the step of changing a level of said RGB signal , by changing the level of said direct current voltage for necessary times based on information obtained from said adjustment information retrieve means at a timing where pixel data of a different color is input to said holding step, a level of said drive signal of at least one color is adjusted.	e.g., Fig. 1, 3 and 13; p. 7, lines 4-9, p. 21, lines 1-4, p. 30, line 21 through p. 21, line 15.

Claim 22. A color balance adjustment method of	e.g., Fig. 1, 3, 14-16; p. 8, lines 9-15.

an image display device as set forth in claim 19,	
wherein said light emitting element is an organic electroluminescence light emitting element.	e.g., Fig. 1, 3, 14-16; p. 15, lines 2-8.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether the Examiner erred in rejecting claims 1, 3-7, 9, 13, 15, 16, and 18 under 35 U.S.C. § 103(a) as obvious over Nakano et al (U.S. Patent No. 6,765,551, hereinafter referred to as "Nakano '551") in view of Inukai (U.S. Patent No. 7,042,427, hereinafter referred to as "Inukai '427")

B. Whether the Examiner erred in rejecting claims 10-12 and 19-22 under 35 U.S.C. § 103(a) over Nakano '551 in view of Miyachi et al (U.S. Patent No. 6,982,686 hereinafter referred to as "Miyachi '686").

C. Whether the Examiner erred in rejecting claim 17 under 35 U.S.C. § 103(a) over Nakano '551 and Inukai '427 in view of Tanada et al (U.S. Patent No. 6,774,578, hereinafter referred to as "Tanada '578").

VII. ARGUMENT

In the Final Office Action of July 1, 2009:

The Examiner erred in rejecting claims 1, 3, 7, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427.

The Examiner erred in rejecting claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427.

The Examiner erred in rejecting claims 4-6 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427.

The Examiner erred in rejecting claims 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.

The Examiner erred in rejecting claims 19 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.

The Examiner erred in rejecting claims 20-21 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.

The Examiner erred in rejecting claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 and Inukai '427 in view of Tanada '578.

For at least the following reasons, Appellant submits that these rejections are both technically and legally unsound and should therefore be reversed.

For purposes of this Appeal Brief, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below.

VII. A1. The Examiner erred in rejecting claims 1, 3, 7, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427.

Claims 3, 7 and 9 are dependant on claim 1 and thus incorporate the features therein.

Claim 1 recites:

An image display device, comprising:

a circuit *for generating drive signals from an input image signal;*

a plurality of pixels *including a light emitting element for emitting light of a predetermined color of red, green, or blue by being applied with said drive signal supplied for each color from said circuit;*

an adjustment information retrieve means *for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element;*

a level adjustment circuit *provided in said circuit, for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means; and*

wherein said level adjustment circuit changes a level of a direct current voltage supplied to said circuit, proportionally to account for the deterioration of a luminance of said light emitting element; and

said adjustment information retrieve means and said level adjustment circuit further comprise:

a plurality of pixels, *including pixels of at least each respective RGB color;*

a detection means *for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.*

Nakano '551 ***fails*** to disclose, teach or suggest "*an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element; a level adjustment circuit provided in said circuit, for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means; and wherein said level adjustment circuit changes a level of a direct current voltage supplied to said circuit, proportionally to account for the deterioration of a luminance of said light emitting element.*"

The Office Action, however, alleges these features can be found in various sections of Nakano '551. This is wholly inaccurate.

Nakano '551 relates to a column electrode driving circuit for use with an image display device for displaying images, such as characters and/or (still or moving) pictures; and an image display device incorporating such a column electrode driving circuit. Nakano '551 indicates that

among the reference voltage levels independently selected corresponding to a given gray scale level in the input data of the first color, the second color, and the third color, the reference voltage levels selected corresponding to the first color and the third color are shifted relative to the reference voltage level selected corresponding to the second color by a predetermined number of gray scale levels; and the column electrode driving circuit provides a number of additional reference voltage levels for interpolation purposes, the number being equal to the predetermined number.

Fig. 1 of Nakano '551 illustrates an example whereby Nakano '551 replaces elements 4-6 of Fig. 3 with a more complex color adjustment mechanism having 64+3 individual color adjustment line values. Nakano '551 explains that the color adjustment line values provide values that correspond to Red, Blue, and Green color adjustments (col. 6, l. 64 – col. 7, l. 11).

Fig. 3 of Nakano '551 illustrates the mechanism by which RGB values are adjusted. Sampling memory 3 receives data that is divided into separate values, which pass to hold memory 4, then D/A converter 5. D/A converter 5 uses the reference voltages for each of the different colored pixels to adjust the chromaticity of the different pixel RGB values. However, this adjustment is clearly being done after the signal is divided into its constituent RGB values.

Indeed, Nakano '551 discloses a column electrode driving circuit including a reference voltage generation circuit that adjusts the chromaticity of the display signal ***after* dividing the drive signals to their respective RGB colors.** The display applies one of 64 grayscale levels of luminance to each separated RGB color signal.

In contrast, Appellant claims a level adjustment circuit provided in said circuit, for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means and changes a level of a direct current voltage supplied to said circuit, ***proportionally*** to account for the deterioration of a luminance of said light emitting element.

Nonetheless, the Office Action rejects the cited portion of claim 1 by citing to element 70 of Nakano '551 and columns 6 and 8. The cited portion of column 6 recites:

> The output circuit 60 subjects the analog signals ***which have been converted*** by the D/A converter 50 to impedance conversion, and outputs the resultant analog signals as 40 ***driving voltages to the data lines*** coupled to the respective output nodes.

As such, the cited portion of claim 6 runs counter to the Office Action interpretation, as it clearly recites adjustments being made to the signal after the signal has been divided into its respective components.

Furthermore, the elements of Fig. 1, such as elements 40-70 replace elements 4-7 in Fig.3. However, they maintain the same form of input and output. These components operate and receive the RGB data as 384 values, with 128 inputs designated for each color (Col. 1, ll. 42-50). Since the wholesale replacement of the elements does not change their respective inputs, it becomes further evident that elements 40-70 **operate on divided drive signals**.

Reiterating, there is ***no mention of*** a level adjustment circuit provided in said circuit, for changing a level of an RGB signal ***before*** dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means in Nakano '551.

Moreover, there is ***no mention*** of an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element in Nakano '551.

The Final Office Action of July 1, 2009 ***admits*** Nakano '551 does not disclose "*an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element; and said adjustment information retrieve means and said level adjustment circuit further comprise: plurality of pixels, including pixels of at least each respective RGB color; detection means for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements,*" but alleges Inukai '427 does.

Inukai '427 does not remedy the deficiencies of Nakano '551, as the various features recited above are also absent from Inukai '427. Inukai '427 fails to teach disclose or suggest, for

example, Appellant's claimed features of "*an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element; a level adjustment circuit provided in said circuit, for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means; and wherein said level adjustment circuit changes a level of a direct current voltage supplied to said circuit, proportionally to account for the deterioration of a luminance of said light emitting element,*" are neither disclosed nor suggested by Inukai '427.

Inukai '427 relates to an OLED panel in which an organic light emitting device (OLED) formed on a substrate is enclosed between the substrate and a cover member. A light emitting device with a simple and easy structure without waste is provided, in which a change of luminance of an OLED is suppressed and a desired color display can be stably performed even if an organic light emitting layer is somewhat deteriorated or an environmental temperature is varied. A driving current of the OLED of a pixel portion is measured, and a value of the voltage supplied to the pixel portion from a variable power supply is corrected such that the measured driving current has a reference value. When the driving current of the OLED is measured, a monitor video signal of a different system from that of a video signal for displaying an image is used to display a monitor image on the pixel portion.

In contrast, Appellant claims a level adjustment circuit provided in said circuit, for changing a level of an RGB signal <u>before</u> dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means. There is <u>***no mention***</u> of a level adjustment circuit provided in said circuit, for changing a level of an RGB signal <u>***before*** dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means</u> and <u>changes a level of a direct current voltage</u> supplied to said circuit, <u>***proportionally*** to account for the deterioration of a luminance of said light emitting element</u> in Inukai '427.

Second, Inukai '427 ***fails*** to disclose, teach or suggest "*an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element; and said adjustment information retrieve means and said level adjustment circuit further comprise: a plurality of pixels, including pixels of at least each respective RGB color; a detection means for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.*"

The Examiner alleges these features can be found in col. 7, lines 19-29 of Inukai '427. This is inaccurate.

Col. 7, lines 19-29 of Inukai '427 states:

> According to the present invention, with the above-described structure, the reduction of the luminance of the OLED can be suppressed even if the organic light emitting layer is deteriorated. As a result, a clear image can be displayed. Further, in case of the light emitting device with the color display in which the OLEDs corresponding to respective colors are used, the balance of luminance among the respective colors is prevented from being lost, and a desired color can be displayed even when the organic light emitting layers of the OLEDs deteriorate at different speeds in accordance with the corresponding colors.

In contrast, Appellant's specification at p. 7, lines 1-8, p. 19, line 25 through p. 20, line 25, p. 30, line 22-24 states:

> [0016] an adjustment information retrieve means (4) for obtaining information relating to light emission adjustment of the light emitting element (EL); and a level adjustment circuit (2B) provided in the circuit (2), for changing a level of an RGB signal (S22) before divided to the drive signals (SHR, SHG and SHB) for respective RGB colors based on the information obtained by the adjustment information retrieve means (4).
>
> [0059] Also, the display device comprises an adjustment information retrieve means 4 for obtaining information for light emission adjustment and for providing the information to the above level adjustment circuit 2B. The adjustment information retrieve means 4 may be an input means for inputting information given, for example, by an operation from the outside for adjusting color balance fluctuated when produced. Alternately, when level adjustment is for preventing characteristic deterioration of light emitting elements, a means for directly measuring an amount of characteristic deterioration of the light emitting elements, a control means for

> reflecting a reference pixel to be measured and the measurement result to the level adjustment, and furthermore, a storage means stored with a relationship of a level adjustment value and an amount of characteristic deterioration, etc. correspond to embodiments of the adjustment information retrieve means 4. The adjustment information retrieve means 4 is provided inside the signal processing and data line drive circuit 2, inside the cell array 1, or outside of them in accordance with the above object. A configuration example of the adjustment information retrieve means 4 will be explained in other embodiments below.

Though Inukai '427 teaches that the balance of luminance among the respective colors is prevented from being lost, and a desired color can be displayed even when the organic light emitting layers of the OLEDs deteriorate at different speeds in accordance with the corresponding colors, there is ***no mention*** of an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element and a detection means for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.

- Thus, neither Nakano '551 nor Inukai '427 disclose, teach or suggest the various features of claim 1.

VII. A2. The Examiner erred in rejecting claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427").

Claims 16 and 18 are dependant on claim 13 and thus incorporate the features therein.

Claim 13 recites:

> *A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with an input drive signal, including:*
>
> ***a step of obtaining information*** *relating to light emission adjustment of said light emission element;*

a step of changing *a level of an RGB signal before dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment; and*

a step of generating *said drive signals by dividing said RGB signal into the respective colors time-series pixel data and supplying to said pixels corresponding thereto; and wherein*

in the step of changing a level of said RGB signal, a level of the direct current voltage is supplied to a circuit for performing signal processing on an image signal and generating said drive signals, proportionally to the change in luminance of said light emitting element

and the obtaining information step and said changing step include detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.

Nakano '551 **fails** to teach, disclose or suggest "*a step of changing a level of an RGB signal before dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment; a step of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data and supplying to said pixels corresponding thereto; and wherein in the step of changing a level of said RGB signal, a level of the direct current voltage is supplied to a circuit for performing signal processing on an image signal and generating said drive signals, proportionally to the change in luminance of said light emitting element.*"

As stated previously, Nakano '551 discloses a column electrode driving circuit including a reference voltage generation circuit that adjusts the chromaticity of the display signal ***after dividing the drive signals to their respective RGB colors.*** The display applies one of 64 grayscale levels of luminance to each separated RGB color signal.

In contrast, Appellant claims changing a level of an RGB signal ***before*** dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment. There is ***no mention*** of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data ***and*** supplying to said pixels corresponding thereto; and wherein in the step of changing a level of said RGB signal proportionally to the change in luminance of said light emitting element in Nakano '551.

Furthermore, the Final Office Action admits Nakano '551 ***fails*** to teach, disclose or suggest "*wherein the obtaining information step and said changing step include detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements,*" but alleges Inukai '427 does.

Inukai '427 does not remedy the deficiencies of Nakano '551, as the various features recited above are also absent from Inukai '427. Inukai '427 fails to teach disclose or suggest, for example, Appellant's claimed features of "*a step of changing a level of an RGB signal before dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment; a step of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data and supplying to said pixels corresponding thereto; and wherein in the step of changing a level of said RGB signal, a level of the direct current voltage is supplied to a circuit for performing signal processing on an image signal and generating said drive signals, proportionally to the change in luminance of said light emitting element,*" are neither disclosed nor suggested by Inukai '427.

Inukai '427 relates to an OLED panel in which an organic light emitting device (OLED) formed on a substrate is enclosed between the substrate and a cover member. There is ***no mention*** of changing a level of an RGB signal ***before*** dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment. There is also ***no mention*** of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data ***and*** supplying to said pixels corresponding thereto; and wherein in the step of changing a level of said RGB signal proportionally to the change in luminance of said light emitting element in Inukai '427.

Second, Inukai '427 ***fails*** to teach, disclose or suggest "*wherein the obtaining information step and said changing step include detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.*"

The examiner alleges these features can be found in col. 7, lines 19-29 of Inukai '427. This is inaccurate.

Col. 7, lines 19-29 of Inukai '427 states:

> According to the present invention, with the above-described structure, the reduction of the luminance of the OLED can be suppressed even if the organic light emitting layer is deteriorated. As a result, a clear image can be displayed. Further, in case of the light emitting device with the color display in which the OLEDs corresponding to respective colors are used, the balance of luminance among the respective colors is prevented from being lost, and a desired color can be displayed even when the organic light emitting layers of the OLEDs deteriorate at different speeds in accordance with the corresponding colors.

In contrast, Appellant's specification at p. 7, lines 1-8, p. 19, line 25 through p. 20, line 25, p. 30, line 22-24 states:

> [0016] an adjustment information retrieve means (4) for obtaining information relating to light emission adjustment of the light emitting element (EL); and a level adjustment circuit (2B) provided in the circuit (2), for changing a level of an RGB signal (S22) before divided to the drive signals (SHR, SHG and SHB) for respective RGB colors based on the information obtained by the adjustment information retrieve means (4).
>
> [0059] Also, the display device comprises an adjustment information retrieve means 4 for obtaining information for light emission adjustment and for providing the information to the above level adjustment circuit 2B. The adjustment information retrieve means 4 may be an input means for inputting information given, for example, by an operation from the outside for adjusting color balance fluctuated when produced. Alternately, when level adjustment is for preventing characteristic deterioration of light emitting elements, a means for directly measuring an amount of characteristic deterioration of the light emitting elements, a control means for reflecting a reference pixel to be measured and the measurement result to the level adjustment, and furthermore, a storage means stored with a relationship of a level adjustment value and an amount of characteristic deterioration, etc. correspond to embodiments of the adjustment information retrieve means 4. The adjustment

> information retrieve means 4 is provided inside the signal processing and data line drive circuit 2, inside the cell array 1, or outside of them in accordance with the above object. A configuration example of the adjustment information retrieve means 4 will be explained in other embodiments below.

Though Inukai '427 teaches that the balance of luminance among the respective colors is prevented from being lost, and a desired color can be displayed even when the organic light emitting layers of the OLEDs deteriorate at different speeds in accordance with the corresponding colors, there is no mention of <u>detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements</u>.

- Thus, neither Nakano '551 nor Inukai '427 disclose, teach or suggest the various features of claim 13.

<u>VII. A3. The Examiner erred in rejecting claims 4-6 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Inukai '427.</u>

Claims 4-6 is dependant on claim 1 and thus incorporate the features therein but nonetheless include features that are also not disclosed or suggested by Nakano '551 in view of Inukai '427.

Claim 15 is dependant on claim 13 and thus incorporate the features therein but nonetheless include features that are also not disclosed or suggested by Nakano '551 in view of Inukai '427. Claim 15 recites features that are similar to claim 4 and those features will be argued with respect to claim 4.

Claim 4 recites:

> *An image display device as set forth in claim 1, further comprising:*
>
> ***a plurality of data lines*** *for connecting by each color said plurality of pixels repeatedly arranged by a predetermined color arrangement; and*
>
> ***a data holding circuit*** *<u>for holding for the respective RGB colors time-series pixel data composing said RGB signal and outputting the pixel data held for the</u>*

respective colors as said drive signals in parallel with corresponding plurality of said data lines;

wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit.

Nakano '551 in view of Inukai '427 ***fails*** to disclose, teach, or suggest "*a data holding circuit for holding for the respective RGB colors time-series pixel data composing said RGB signal and outputting the pixel data held for the respective colors as said drive signals in parallel with corresponding plurality of said data lines; wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit.*"

The Final Office Action of July 1, 2009 alleges these features can be found in elements 40 and 50 of Nakano '551. This is inaccurate.

As stated previously, Nakano '551 relates to a column electrode driving circuit for use with an image display device for displaying images, such as characters and/or (still or moving) pictures; and an image display device incorporating such a column electrode driving circuit.

The corresponding specification disclosure of Nakano '551 regarding elements 40 and 50 states:

> First, 6-bit sampling data which is stored in a sampling memory (not shown) is transferred based on a data transfer signal LS which is output from a signal control circuit (not shown). A hold memory 40 stores the transferred 6-bit sampling data.
>
> To a D/A converter 50, 64 reference voltage lines L1 to L64 and three interpolating voltage lines H1 to H3 are coupled. A digital/analog conversion switch is provided for each of the reference voltage lines L1 to L64 and the interpolating voltage lines H1 to H3. The D/A converter 50 selects a reference voltage level in accordance with the gray scale level of a 6-bit data signal for each color of RGB (which is the 6-bit

> sampling data stored in the hold memory 40), and converts the selected reference voltage level into an analog signal to be output. Specifically, the D/A converter 50 selects (by means of the digital/analog conversion switches) one of the voltage lines corresponding to the (64+3) reference voltages levels in accordance with the gray scale level of the 6-bit data signal (as bit-corrected) for each color of RGB, and outputs a signal which has been converted into an analog signal to an output circuit 60.

In contrast, Appellant's specification at p. 7, lines 15-21, p. 15, lines 9-21, p. 30, line 21 through p. 31, line 15 states:

> [0018] More preferably, a plurality of data lines (Y) for connecting by each color the plurality of pixels (Z) repeatedly arranged by a predetermined color arrangement; and a data holding circuit (2A) for holding for the respective RGB colors time-series pixel data composing the RGB signal (S22) and outputting the pixel data held for the respective colors as the drive signals (SHR, SHG and SHB) in parallel with corresponding plurality of the data lines (Y) are further provided, wherein the level adjustment circuit (2B) adjusts a level of the drive signal (SHR, SHG and SHB) of at least one color by changing a level (V0 to V5) of the direct current voltage (VREF) for necessary times based on the information obtained from the adjustment information retrieve means (4) at a timing that pixel data of a different color is input to the data holding circuit (2A).
>
> [0056] In the cell array 1 configured as such, for example, when displaying red pixel data by a pixel Z(i, j), a scan line X(i) is selected and a scan signal SV is applied. Also, a data line Y(j) is applied with a drive signal SHR of a current (or voltage) in accordance with the pixel data. As a result, the transistor TRa for controlling data input at the pixel Z(i, j) becomes an on-state, and charges are input to the gate of the transistor TRb via the transistor TRa by the drive signal SHR of the data line Y(j). As a result, a gate voltage of the transistor TRb rises, a current in accordance thereto flows between a source and drain and, furthermore, the current flows to a light emitting element EL connected to the transistor TRb. Consequently, the light emitting element EL of the pixel Z(i, j) emits light of luminescence corresponding to the red pixel data of the drive signal SHR. In the same way, green pixel data can be displayed by using a drive signal SHG, and blue pixel data can be displayed by using a drive signal SGB.

Though Nakano '551 indicates that the converter 50 selects a reference voltage level in accordance with the gray scale level of a 6-bit data signal for each color of RGB (which is the 6-bit sampling data stored in the hold memory 40), and converts the selected reference voltage level into an analog signal to be output, there is ***no mention*** of outputting the pixel data held for the respective colors as said drive signals <u>in parallel with corresponding plurality of said data lines</u>; wherein said

level adjustment circuit adjusts a level of said drive signal of at least one color by <u>changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit.</u>

Inukai '427 does not remedy the deficiencies of Nakano '551, as the various features recited above are also absent from Inukai '427. Inukai '427 fails to teach disclose or suggest, for example, Appellant's claimed features of "*a data holding circuit for holding for the respective RGB colors time-series pixel data composing said RGB signal and outputting the pixel data held for the respective colors as said drive signals in parallel with corresponding plurality of said data lines; wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit,*" are neither disclosed nor suggested by Inukai '427.

Inukai '427 relates to an OLED panel in which an organic light emitting device (OLED) formed on a substrate is enclosed between the substrate and a cover member. There is <u>***no mention***</u> of outputting the pixel data held for the respective colors as said drive signals <u>in parallel with corresponding plurality of said data lines</u>; wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by <u>changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit</u> in Inukai '427.

- Thus, neither Nakano '551 nor Inukai '427 disclose, teach or suggest the various features of claims 1 and 13.

<u>VII. B1. The Examiner erred in rejecting claims 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.</u>

Claims 11-12 are dependant on claim 10 and thus incorporate the features therein.

Claim 10 recites:

An image display device, comprising:

***a circuit** for generating drive signals from an input image signal; and*

***a plurality of pixels** including a light emitting element for emitting light of a predetermined color of red, green or blue by being applied with said drive signal supplied for each color from said circuit;*

wherein said circuit comprises

***a motion detection circuit** for detecting motions by said image signal;*

***a level adjustment circuit** <u>for changing a level of an RGB signal before the RGB signal is divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit</u>; and*

***a duty ratio adjustment circuit** <u>for changing the duty ratio of a light emission time of said pixels based on the motion detection result;</u>*

<u>and wherein the plurality of pixels each comprise a light emission control circuit whereby once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the light emission control circuit receives a signal from the duty ratio adjustment circuit</u>.

As discussed above, Nakano '551 ***<u>fails</u>*** to disclose, teach or suggest "*a level adjustment circuit for changing a level of an RGB signal before divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit*," as recited in independent claim 10.

Miyachi '686 does not remedy the deficiencies of Nakano '551, as the various features recited above are also absent from Miyachi '686.

Miyachi '686 relates to a liquid crystal display device which displays information by illuminating display elements, an image display device, and an illumination device and an emitter used therefor, and also relates to a driving method of the liquid crystal display device, a driving method of the illumination device, and a driving method of the emitter. A cold cathode tube for illuminating pixels with light which is in accordance with an output signal has luminance which gradually increases at a rise and gradually decreases at a fall per one frame time. In certain example embodiments, illuminating elements respectively illuminate display elements in such a manner that each illuminating element group respectively illuminates a display element group in a second luminance in a period from Time P to Time (P+tb), and illuminates in a first luminance in a period from the Time (P+tb) to Time (P+f), the second luminance being darker than the first luminance, where tb is a predetermined time, f is one vertical period, and the Time P is a time at which a display element band having an earliest scanning time in the display element group the illuminating element group illuminates is scanned.

There is ***no mention*** of changing a level of an RGB signal ***before*** the RGB signal is divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit in Miyachi '686.

Moreover, the Office Action ***admits*** Nakano '551 ***fails*** to disclose, teach or suggest "*a duty ratio adjustment circuit for changing the duty ratio of a light emission time of said pixels based on the motion detection result; and wherein the plurality of pixels each comprise a light emission control circuit whereby once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the light emission control circuit receives a signal from the duty ratio adjustment circuit,*" but alleges Miyachi '686 does disclose these features in col. 43, lines 67 through col. 44, lines 9. This is incorrect.

Col. 43, lines 67 through col. 44, lines 9 states:

> Further, the foregoing explained the case where the fast-moving images were selected for evaluation; however, in actual broadcasted images, a moving image and a still image coexist. Thus, the liquid crystal display device may be adapted to have a mechanism for detecting the speed of moving images, so as to automatically adjust

> the dimming period and luminance of the illuminating section. More specifically, as the speed of moving images is increased, the luminance of the dim state is lowered and the dimming period is increased. On the other hand, when the image includes is a still image, no dim state is provided. This improves display quality and suppresses shortening of life of the cold cathode tubes 708 (emitters) even more efficiently. That is, no dim state is provided for the still image. In this way, the light will not be switched OFF nor will it be dimmed, thus further suppressing shortening of life of the cold cathode tubes 708. Further, the same effect can be obtained by allowing the user to externally adjust the dimming period and luminance of the illuminating section as he/she desires, instead of providing the image detecting mechanism.

Though Miyachi '686 discloses automatically adjusting the dimming period and luminance of the illuminating section in order to improve the display quality and suppresses shortening of life of the cold cathode tubes, there is ***no mention*** of a duty ratio adjustment circuit wherein the plurality of pixels each comprise a light emission control circuit whereby once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the light emission control circuit receives a signal from the duty ratio adjustment circuit.

- Thus, neither Nakano '551 nor Miyachi '686 disclose, teach or suggest the various features of claims 10-12.

VII. B2. The Examiner erred in rejecting claims 19 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.

Claim 22 is dependant on claim 19 and thus incorporate the features therein.

Claim 19 recites:

> *A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with a drive generated by performing signal processing on an input image signal, including:*
>
> ***a step of detecting** motions of an image to be displayed from said image signal;*

a step of changing *a level of an RGB signal before the RGB signal is divided to said drive signals of the respective RGB colors based on the result of said motion detection; and*

a step of changing *a duty ratio of a pulse for controlling a light emission time of said pixels based on said detection result; and*

a step of illuminating *the plurality of pixels wherein, for each pixel, once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the pixel continues to receives a signal from the duty ratio adjustment circuit.*

As stated above, Nakano '551 relates to a column electrode driving circuit for use with an image display device for displaying images, such as characters and/or (still or moving) pictures; and an image display device incorporating such a column electrode driving circuit. Miyachi '686 relates to a liquid crystal display device which displays information by illuminating display elements, an image display device, and an illumination device and an emitter used therefor, and also relates to a driving method of the liquid crystal display device, a driving method of the illumination device, and a driving method of the emitter.

Neither Nakano '551 nor Miyachi '686 disclose or suggest changing a level of an RGB signal ***before*** the RGB signal is divided to said drive signals of the respective RGB colors based on the result of said motion detection.

Moreover, neither Neither Nakano'551 nor Miyachi'686 disclose or suggest illuminating the plurality of pixels wherein, for each pixel, once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the pixel continues to receives a signal from the duty ratio adjustment circuit.

- Thus, neither Nakano '551 nor Miyachi '686 disclose, teach or suggest the various features of claims 19 and 22.

<u>VII. B3. The Examiner erred in rejecting claims 20-21 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 in view of Miyachi '686.</u>

Claims 20-21 are dependant on claim 19 and thus incorporate the features therein but nonetheless include features that are also not disclosed or suggested by Nakano '551 in view of Miyachi '686.

Claim 20 recites:

> *A color balance adjustment method of an image display device as set forth in claim 19, wherein*
>
> ***in the step of changing a level of said RGB signal***, *<u>a level of a direct current voltage supplied to a circuit block in a circuit for performing signal processing on an image signal and generating said drive signals, and proportional to luminance of said light emitting element is changed</u>.*

Neither Nakano '551 nor Miyachi '686 disclose, teach, or suggest "*in the step of changing a level of said RGB signal, a level of a direct current voltage supplied to a circuit block in a circuit for performing signal processing on an image signal and generating said drive signals, and proportional to luminance of said light emitting element is changed.*"

Nakano '551 relates to a column electrode driving circuit for use with an image display device for displaying images, such as characters and/or (still or moving) pictures; and an image display device incorporating such a column electrode driving circuit. Miyachi '686 relates to a liquid crystal display device which displays information by illuminating display elements, an image display device, and an illumination device and an emitter used therefor, and also relates to a driving method of the liquid crystal display device, a driving method of the illumination device, and a driving method of the emitter.

There is ***<u>no mention</u>*** of changing a level of said RGB signal, a level of a direct current voltage supplied to a circuit block in a circuit ***<u>for</u>*** <u>performing signal processing on an image signal</u>

and generating said drive signals, ***and*** proportional to luminance of said light emitting element is changed in Nakano '551 or Miyachi '686.

- Thus, neither Nakano '551 nor Miyachi '686 disclose, teach or suggest the various features of claims 20-21.

VII. C1. The Examiner erred in rejecting claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Nakano '551 and Inukai '427 in view of Tanada '578.

Claim 17 depends from and thus incorporates the features of claims 13 which are neither disclosed nor suggested by Nakano '551 and Inukai '427, for the reasons stated above.

Tanada '578 does not remedy the deficiencies of Nakano '551 and Inukai '427, as the various features recited above are also absent from Tanada '578. For example, Applicant's claimed features of "*a level adjustment circuit for changing a level of an RGB signal before divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit,*" are neither disclosed nor suggested by Tanada '578.

Tanada'578 discloses a device for detecting and accounting for EL degradation by detecting the variance in luminance on a pixel-by-pixel basis. Tanada '578 employs photoelectric elements 106 which are each positioned on a separate pixel 107 of the display device. This allows each photoelectric element 106 to monitor a given pixel 107, which in turn allows the system to properly adjust the intensity of the pixels. Each photoelectric element 106 monitors the actual light output of the pixels. The system operates by making corrections based on a test pattern provided in unit 103. Memory circuit 104 stores the brightness results, and the data brightness correction is stored in correction data storage portion 102. In the background, Tanada '578 also discusses how previous attempts to account for pixel deterioration included using a timer to track how long the display device was in use, and thereby predict the expected pixel deterioration based on experimental results.

There is ***no mention*** of changing a level of an RGB signal ***before*** dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment in Tanada '578. There is also ***no mention*** of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data ***and*** supplying to said pixels corresponding thereto; and wherein in the step of changing a level of said RGB signal proportionally to the change in luminance of said light emitting element in Tanada '578.

- Thus, Nakano '551, Inukai '427 nor Tanada '578 disclose, teach or suggest the various features of claim 17.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132, or additional evidence entered by or relied upon by the Examiner is being submitted.

X. RELATED PROCEEDINGS

No related proceedings are referenced in section II above, or copies of decisions in related proceedings are not provided.

Dated: Respectfully submitted,

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APPENDIX A

1. An image display device, comprising:

a circuit for generating drive signals from an input image signal ;

a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green, or blue by being applied with said drive signal supplied for each color from said circuit;

an adjustment information retrieve means for obtaining information relating to light emission adjustment proportional to the deterioration of said light emitting element;

a level adjustment circuit provided in said circuit , for changing a level of an RGB signal before dividing said drive signals to respective RGB colors based on said information obtained by said adjustment information retrieve means; and

wherein said level adjustment circuit changes a level of a direct current voltage supplied to said circuit, proportionally to account for the deterioration of a luminance of said light emitting element; and

said adjustment information retrieve means and said level adjustment circuit further comprise:

a plurality of pixels, including pixels of at least each respective RGB color;

a detection means for detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.

2. (Canceled)

3. An image display device as set forth in claim 1, further comprising

a D/A converter for performing digital-analog conversion on said RGB signal;

wherein

said adjustment information retrieve means retrieves said information relating to changes over time for each of RGB colors; and

said level adjustment circuit changes a reference voltage to be supplied to said D/A converter based on said information of respective RGB colors obtained by said adjustment information retrieve means.

4. An image display device as set forth in claim 1, further comprising:

a plurality of data lines for connecting by each color said plurality of pixels repeatedly arranged by a predetermined color arrangement; and

a data holding circuit for holding for the respective RGB colors time-series pixel data composing said RGB signal and outputting the pixel data held for the respective colors as said drive signals in parallel with corresponding plurality of said data lines;

wherein said level adjustment circuit adjusts a level of said drive signal of at least one color by changing a level of said direct current voltage for necessary times based on said information obtained from said adjustment information retrieve means at a timing that pixel data of a different color is input to said data holding circuit.

5. An image display device as set forth in claim 4, wherein a control signal input to said level adjustment circuit for changing a level of said direct current voltage is in common with a sample hold signal for controlling said data holding circuit.

6. An image display device as set froth in claim 4, wherein a control signal input to said level adjustment circuit for changing said direct current voltage is a signal in synchronization with a sample hold signal for controlling said data holding circuit.

7. An image display device as set froth in claim 1, wherein:

said adjustment information retrieve means and said level adjustment circuit further comprises;

a memory means for storing correspondence of said changing value and a level adjustment amount of said RGB signal.

8. (Canceled)

9. An image display device as set froth in claim 1, wherein said light emitting element is an organic electroluminescence light emitting element.

10. An image display device, comprising:

a circuit for generating drive signals from an input image signal; and

a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue by being applied with said drive signal supplied for each color from said circuit;

wherein said circuit comprises

a motion detection circuit for detecting motions by said image signal;

a level adjustment circuit for changing a level of an RGB signal before the RGB signal is divided to said drive signals for the respective RGB colors based on a result of the motion detection obtained from said motion detection circuit; and

a duty ratio adjustment circuit for changing the duty ratio of a light emission time of said pixels based on the motion detection result;

and wherein the plurality of pixels each comprise a light emission control circuit whereby once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the light emission control circuit receives a signal from the duty ratio adjustment circuit.

11. An image display device as set forth in claim 10, wherein said level adjustment circuit changes a level of a direct current voltage supplied from a circuit block in said circuit and proportional to luminance of said light emitting element.

12. An image display device as set forth in claim 10, wherein said light emitting element is an organic electroluminescence light emitting element.

13. A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with an input drive signal, including:

a step of obtaining information relating to light emission adjustment of said light emission element;

a step of changing a level of an RGB signal before dividing said RGB signal into said drive signals of respective RGB colors based on said information on light emission adjustment; and

a step of generating said drive signals by dividing said RGB signal into the respective colors time-series pixel data and supplying to said pixels corresponding thereto; and wherein

in the step of changing a level of said RGB signal, a level of the direct current voltage is supplied to a circuit for performing signal processing on an image signal and generating said drive signals, proportionally to the change in luminance of said light emitting element

and the obtaining information step and said changing step include detecting a changing value corresponding to the luminance of the plurality of pixels by measuring the voltage between the ends of the light emitting elements.

14. (Canceled)

15. A color balance adjustment method of an image display device as set forth in claim 13, including

a holding step for holding for the respective RGB colors time-series pixel data composing said RGB signal when generating said drive signals;

wherein, in the step of changing a level of said RGB signal , by changing the level of said direct current voltage for necessary times based on information obtained from an adjustment information retrieve means at a timing that pixel data of a different color is input to said holding step, a level of said drive signal of at least one color is adjusted.

16. A color balance adjustment method of an image display device as set forth in claim 13, wherein

the step of retrieving information relating to said light emission adjustment includes

a step of detecting a value changing along with luminance of pixels from pixels of the respective colors; and

a step of determining a level adjustment amount of said RGB signal from said changing value based on correspondence of said changing value and a level adjustment amount of said RGB signal obtained in advance.

17. A color balance adjustment method of an image display device as set forth in claim 13, wherein

the step of retrieving information relating to said light emission adjustment includes

a step of counting an accumulated light emission time of the pixels; and

step of determining a level adjustment amount of said RGB signal from the current accumulated light emission time of the pixels based on the correspondence of said accumulated light emission time and the level adjustment amount of said RGB signal obtained in advance.

18. A color balance adjustment method of an image display device as set forth in claim 13, wherein said light emitting element is an organic electroluminescence light emitting element.

19. A color balance adjustment method of an image display device, comprising a plurality of pixels including a light emitting element for emitting light of a predetermined color of red, green or blue in accordance with a drive generated by performing signal processing on an input image signal, including:

a step of detecting motions of an image to be displayed from said image signal;

a step of changing a level of an RGB signal before the RGB signal is divided to said drive signals of the respective RGB colors based on the result of said motion detection; and

a step of changing a duty ratio of a pulse for controlling a light emission time of said pixels based on said detection result; and

a step of illuminating the plurality of pixels wherein, for each pixel, once the pixel receives a drive signal, the light emitting element continues to draw on a voltage source so long as the pixel continues to receives a signal from the duty ratio adjustment circuit.

20. A color balance adjustment method of an image display device as set forth in claim 19, wherein

in the step of changing a level of said RGB signal , a level of a direct current voltage supplied to a circuit block in a circuit for performing signal processing on an image signal and generating said drive signals , and proportional to luminance of said light emitting element is changed.

21. A color balance adjustment method of an image display device as set forth in claim 20, including

a holding step for holding for the respective RGB colors time-series pixel data composing said RGB signal when generating said driving signals ;

wherein, in the step of changing a level of said RGB signal , by changing the level of said direct current voltage for necessary times based on information obtained from said adjustment information retrieve means at a timing where pixel data of a different color is input to said holding step, a level of said drive signal of at least one color is adjusted.

22. A color balance adjustment method of an image display device as set forth in claim 19, wherein said light emitting element is an organic electroluminescence light emitting element.

APPENDIX B

There is no other evidence which will directly affect or have a bearing on the Board's decision in this appeal.

APPENDIX C

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. There are no other court proceedings which will or have a bearing on the court's decision.